U.S. Appln. No.: 10/811,395

Amendment under 37 C.F.R. § 1.111

Q80750

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): An ink for inkjet comprising an aqueous medium, at least one of dyes represented by the following formulae (1) to (4) dissolved or dispersed in the aqueous medium, and at least one of alkylene diols where one alkylene group has at least 3 carbon atoms or their homologues dissolved or dispersed in the aqueous medium:

$$(A_{11}-N=N-B_{11})_{n}-L (1)$$

wherein A_{11} and B_{11} each independently represent an optionally-substituted heterocyclic group; n is an integer selected from 1 and 2; L represents a substituent bonding to A_{11} or B_{11} at any desired position; when n is 1, L represents a hydrogen atom or a monovalent substituent; and when n is 2, L represents a single bond or a divalent linking group;

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$$(X_{24}) a_{24}$$

$$(Y_{23}) b_{23}$$

$$N = M$$

$$N = M$$

$$N = M$$

$$(X_{24}) a_{24}$$

$$(Y_{21}) b_{21}$$

$$(X_{23}) a_{23}$$

$$(X_{24}) a_{24}$$

$$(Y_{21}) b_{21}$$

$$(X_{21}) a_{21}$$

$$(Y_{22}) b_{22}$$

$$(X_{22}) a_{22}$$

$$(X_{22}) a_{22}$$

wherein X₂₁, X₂₂, X₂₃, and X₂₄ each independently represent –SO–Z₂, –SO₂–Z₂, SO₂NR₂₁R₂₂, a sulfo group, –CONR₂₁R₂₂, or –CO₂R₂₁; Z₂ independently represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; R₂₁ and R₂₂ each independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group;

Y₂₁, Y₂₂, Y₂₃, and Y₂₄ each independently represent a monovalent substituent;

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 a_{21} to a_{24} , and b_{21} to b_{24} indicate the number of the substituents of X_{21} to X_{24} and Y_{21} to Y_{24} , respectively; a_{21} to a_{24} each independently represent a number of from 0 to 4, but all of these are not 0 at the same time; b_{21} to b_{24} each independently represent a number of from 0 to 4; and when a_{21} to a_{24} , and a_{24} are a number of 2 or more, then plural a_{21} is to a_{24} and a_{24} indicate the number of the substituents of a_{24} and a_{24} and a_{24} indicate the number of the substituents of a_{24} and a_{24} and a_{24} are a number of 2 or more, then plural a_{21} is to a_{24} and a_{24} and a_{24} are a number of 2 or more, then plural a_{21} is to a_{24} and a_{24} indicate the number of the substituents of a_{24} and a_{24} and a_{24} are a number of 2 or more, then plural a_{21} is to a_{24} and a_{24} and a_{24} indicate the number of the substituents of a_{24} and a_{24} are a number of 2 or more, then plural a_{21} is to a_{24} and a_{24} and a_{24} indicate the number of the substituents of a_{24} and a_{24} and a_{24} are a number of 2 or more, then plural a_{24} indicate the number of a_{24} and a_{24} indicate the number of a_{24} and a_{24} and a_{24} are a number of 2 or more, then plural a_{24} indicate the number of a_{24} and a_{24} indicate the number of a_{24} indicate the number of a

M represents a hydrogen atom, a metal atom or its oxide, hydroxide or halide;

$$A_{31} - N = N - N - N - N - N - R_{35}$$

$$R_{36}$$

$$R_{36}$$
(3)

wherein A₃₁ represents a 5-membered hetero ring; B₃₁ and B₃₂ each represent =CR₃₁- or -CR₃₂=, or either one of them is a nitrogen atom and the other is =CR₃₁- or -CR₃₂=; R₃₅ and R₃₆ each independently represent a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl or arylsulfonyl group, or a sulfamoyl group, and each group may be substituted; G₃, R₃₁ and R₃₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a heterocyclic-oxycarbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a carbamoyloxy group, an alkoxycarbonyloxy group, an aryloxycarbonyloxy group, an acylamino group, an acylamino group, an acylamino group, an acylamino group,

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an ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an alkyl or arylsulfonylamino group, a heterocyclic sulfonylamino group, a nitro group, an alkyl or arylthio group, an alkyl or arylsul fonyl group, a heterocyclic sulfonyl group, an alkyl or arylsulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group, a sulfo group, or a heterocyclic-thio group, and each group may be substituted; R₃₁ and R₃₅, or R₃₅ and R₃₆ may bond to each other to form a 5- or 6-membered ring;

$$A_{41}-N=N-A_{42}-N=N-A_{43} \tag{4}$$

wherein A_{41} , A_{42} and A_{43} each independently represent an optionally-substituted aromatic or heterocyclic group; A_{41} and A_{43} are monovalent group, and A_{42} is a divalent group.

- 2. (original): An ink set for inkjet comprising at least one ink of claim 1.
- 3. (currently amended): An ink for inkjet comprising an aqueous medium, at least one of dyes represented by the following formulae (1) to (4) dissolved or dispersed in the aqueous medium, and at least one polymer compound dissolved or dispersed in the aqueous medium:

$$(A_{11}-N=N-B_{11})_n-L (1)$$

wherein A_{11} and B_{11} each independently represent an optionally-substituted heterocyclic group; n is an integer selected from 1 and 2; L represents a substituent bonding to A_{11} or B_{11} at any desired position; when n is 1, L represents a hydrogen atom or a monovalent substituent; and when n is 2, L represents a single bond or a divalent linking group;

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$$(X_{24}) a_{24}$$

$$(Y_{23}) b_{23} \qquad N \qquad N \qquad (Y_{21}) b_{21}$$

$$(X_{23}) a_{23} \qquad N \qquad N \qquad (X_{21}) a_{21}$$

$$(X_{22}) a_{22} \qquad (X_{22}) a_{22}$$

$$(X_{22}) a_{22} \qquad (X_{22}) a_{22}$$

wherein X₂₁, X₂₂, X₂₃, and X₂₄ each independently represent –SO–Z₂, –SO₂–Z₂, SO₂NR₂₁R₂₂, a sulfo group, –CONR₂₁R₂₂, or –CO₂R₂₁; Z₂ independently represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted ayl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; R₂₁ and R₂₂ each independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted ayl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group;

 Y_{21} , Y_{22} , Y_{23} , and Y_{24} each independently represent a monovalent substituent; a_{21} to a_{24} , and b_{21} to b_{24} indicate the number of the substituents of X_{21} to X_{24} and Y_{21} to Y_{24} , respectively; a_{21} to a_{24} each independently represent a number of from 0 to 4, but all of

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these are not 0 at the same time; b_{21} to b_{24} each independently represent a number of from 0 to 4; and when a_{21} to a_{24} , and b_{21} to b_{24} are a number of 2 or more, then plural X_{21} 's to X_{24} 's and Y_{21} 's to Y_{24} 's may be the same or different;

M represents a hydrogen atom, a metal atom or its oxide, hydroxide or halide;

$$A_{31} - N = N - N - N - N - N - R_{35}$$

$$R_{36}$$

$$R_{36}$$
(3)

wherein A₃₁ represents a 5-membered hetero ring; B₃₁ and B₃₂ each represent =CR₃₁- or -CR₃₂=, or either one of them is a nitrogen atom and the other is =CR₃₁- or -CR₃₂=; R₃₅ and R₃₆ each independently represent a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl or arylsulfonyl group, or a sulfamoyl group, and each group may be substituted; G₃, R₃₁ and R₃₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a heterocyclic-oxycarbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a carbamoyloxy group, an alkoxycarbonyloxy group, an aryloxycarbonyloxy group, an acylamino group, an aryloxycarbonyloxy group, an acylamino group, an aryloxycarbonylamino group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an aryloxycarbonylamino group, an alkyl or arylsulfonylamino group, a heterocyclic

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sulfonylamino group, a nitro group, an alkyl or arylthio group, an alkyl or arylsul fonyl group, a heterocyclic sulfonyl group, an alkyl or arylsulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group, a sulfo group, or a heterocyclic-thio group, and each group may be substituted; R₃₁ and R₃₅, or R₃₅ and R₃₆ may bond to each other to form a 5- or 6-membered ring;

$$A_{41}-N=N-A_{42}-N=N-A_{43}$$
 (4)

wherein A_{41} , A_{42} and A_{43} each independently represent an optionally-substituted aromatic or heterocyclic group; A_{41} and A_{43} are monovalent group, and A_{42} is a divalent group.

- 4. (original): The ink for inkjet as claimed in claim 3, wherein the at least one polymer compound is a latex dispersion.
- 5. (original): The ink for inkjet as claimed in claim 3, wherein the at least one polymer compound is a water-soluble polymer.
- 6. (original): The ink for inkjet as claimed in claim 3, wherein the at least one polymer compound has a cationic group.
 - 7. (original): An ink set for inkjet comprising at least one ink of any of claims 3 to 6.
- 8. (currently amended): An ink set for inkjet comprising at least a first ink and a second ink, wherein

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the first ink contains an aqueous medium and at least one of dyes represented by the following formulae (1) to (4) dissolved or dispersed in the aqueous medium, and

the second ink contains at least one compound capable of interacting with the at least one of dyes represented by the following formulae (1) to (4) dissolved or dispersed in the aqueous medium, provides that the at least one compound capable of interacting with the at least one of dyes represented by formulae (1) to (4) is selected from the group consisting of a polycationic compound having cationic groups of amines, a polycationic compound having cationic groups of amidines, a polycationic compound having cationic groups of pyridine hetero groups, a polymer having an amino group in a backbone chain or side chain, a polymer having a guanidino group in a backbone chain or side chain, and a polymer having an amidino group in a backbone chain or side chain.

$$(A_{11}-N=N-B_{11})_n-L$$
 (1)

wherein A_{11} and B_{11} each independently represent an optionally-substituted heterocyclic group; n is an integer selected from 1 and 2; L represents a substituent bonding to A_{11} or B_{11} at any desired position; when n is 1, L represents a hydrogen atom or a monovalent substituent; and when n is 2, L represents a single bond or a divalent linking group;

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$$(X_{24}) a_{24}$$

$$(Y_{23}) b_{23}$$

$$(X_{24}) a_{24}$$

$$(Y_{21}) b_{21}$$

$$(X_{23}) a_{23}$$

$$(X_{23}) a_{23}$$

$$(Y_{21}) b_{21}$$

$$(X_{21}) a_{21}$$

$$(Y_{22}) b_{22}$$

$$(X_{22}) a_{22}$$

$$(X_{22}) a_{22}$$

wherein X₂₁, X₂₂, X₂₃, and X₂₄ each independently represent –SO–Z₂, –SO₂–Z₂, SO₂NR₂₁R₂₂, a sulfo group, –CONR₂₁R₂₂, or –CO₂R₂₁; Z₂ independently represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; R₂₁ and R₂₂ each independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group;

 Y_{21} , Y_{22} , Y_{23} , and Y_{24} each independently represent a monovalent substituent; a_{21} to a_{24} , and b_{21} to b_{24} indicate the number of the substituents of X_{21} to X_{24} and Y_{21} to Y_{24} , respectively; a_{21} to a_{24} each independently represent a number of from 0 to 4, but all of

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these are not 0 at the same time; b_{21} to b_{24} each independently represent a number of from 0 to 4; and when a_{21} to a_{24} , and b_{21} to b_{24} are a number of 2 or more, then plural X_{21} 's to X_{24} 's and Y_{21} 's to Y_{24} 's may be the same or different;

M represents a hydrogen atom, a metal atom or its oxide, hydroxide or halide;

$$A_{31} - N = N - N - N - N - N - N - N - R_{35}$$

$$R_{36}$$
(3)

wherein A₃₁ represents a 5-membered hetero ring; B₃₁ and B₃₂ each represent =CR₃₁- or -CR₃₂=, or either one of them is a nitrogen atom and the other is =CR₃₁- or -CR₃₂=; R₃₅ and R₃₆ each independently represent a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl or arylsulfonyl group, or a sulfamoyl group, and each group may be substituted; G₃, R₃₁ and R₃₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a heterocyclic-oxycarbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a carbamoyloxy group, an alkoxycarbonyloxy group, an aryloxycarbonyloxy group, an acylamino group, an aryloxycarbonyloxy group, an aryloxycarbonylamino group, an aryloxycarbonylamino group, an aryloxycarbonylamino group, an aryloxycarbonylamino group, an alkyl or arylsulfonylamino group, a heterocyclic

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sulfonylamino group, a nitro group, an alkyl or arylthio group, an alkyl or arylsul fonyl group, a heterocyclic sulfonyl group, an alkyl or arylsulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group, a sulfo group, or a heterocyclic-thio group, and each group may be substituted; R₃₁ and R₃₅, or R₃₅ and R₃₆ may bond to each other to form a 5- or 6-membered ring;

$$A_{41}-N=N-A_{42}-N=N-A_{43}$$
 (4)

wherein A_{41} , A_{42} and A_{43} each independently represent an optionally-substituted aromatic or heterocyclic group; A_{41} and A_{43} are monovalent group, and A_{42} is a divalent group.

- 9. (canceled).
- 10. (canceled).
- 11. (currently amended): An inkjet recording method with an ink set of any of claims 8 to 10 as claimed in claim 8, comprising a step of forming an image with the first ink and a step of applying the second ink onto the image.
- 12. (new): The ink set for inkjet as claimed in claim 8, wherein at least two of A_{41} , A_{42} and A_{43} in formula (4) are heterocyclic groups.
- 13. (new): The ink set for inkjet as claimed in claim 8, wherein the dye of formula (2) is represented by formula (5):

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wherein X₅₁, X₅₂, X₅₃ and X₅₄ each independently represent –SO–Z₂, –SO₂–Z₂, –SO₂NR₂₁R₂₂, a sulfo group, –CONR₂₁R₂₂, or –CO₂R₂₁; Z₂ independently represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; R₂₁ and R₂₂ each independently represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group;

 Y_{51} to Y_{58} each independently represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a cyano group, an alkoxy group, an amido group, a ureido group, a sulfonamido



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group, a carbamoyl group, a sulfamoyl group, an alkoxycarbonyl group, a carboxyl group or a sulfo group;

 M_1 represents a hydrogen atom, a metal atom or its oxide, hydroxide or halide; and a_{51} to a_{54} each independently represents an integer of 1 or 2.